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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/509,360

Applicant(s)

KLINK, JOACHIM

Examiner

Andrew Lai

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/24/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 9/24/2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/24/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 24 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites, in last clause, "*the communication devices to form a network*" wherein the word "to" makes the text indefinite. Correction is required. Examiner takes the text as being "*the communication devices ~~to~~ form a network*" and will base subsequent Office Action on said reading.

Claim 24 recites, in its entirety, "*The method according to claim 22, wherein different variants of an MPLS-OAM segment flow exist which are defined as Type A, Type B etc. and which can be set up to be functionally independent of each other for the same connection*". It is unclear what Type A and Type B are and the difference between them. Applicant provided on page 5 first two paragraphs what appear to be describing said Type A and Type B by merely saying:

The Type-A MPLS OAM packet flow is distinguished from the end-to-end defined MPLS OAM packet flow. It is used in particular when there is OAM communication between the nodes which delimit a segment of Type A (fig. 2)...

Finally the MPLS OAM Type-B packet flow is distinguished from the two types of packet flow given here. It is used especially if there is an OAM communication between the nodes which delimit a Type-B segment (Fig. 2)...

Even the above descriptions together with Fig. 2 have not provided a clear distinction between Type A and Type B. This renders the claims language unclear and

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indistinct to such extent that it is impossible to search for prior art. However, an absence of prior art should not be construed as indicating allowable subject matter.

Also, the phrase "etc." in this claim renders the claim indefinite because it is unclear whether the limitations and/or what particular elements hereinbefore are part of the claimed invention. See MPEP § 2173.05(d).

Claim 25 recites, in its entirety, "*The method according to Claim 19, wherein only one MPLS-OAM segment flow of the same, but a number of MPLS-OAM segment flows of different variants can be simultaneously created for any given segment of the connection.*" It is unclear what the first half (underlined portion, especially the boldfaced part) of the claim claims. In light of the Specification, Examiner reads the claims as being "*The method according to Claim 19, wherein ~~only one MPLS-OAM segment flow of the same~~, but a number of MPLS-OAM segment flows of different variants can be simultaneously created for any given segment of the connection*" and will base subsequent Office Action on said reading.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 13, 14, 17-20, 26-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Harrison et al ("OAM Functionality for MPLS Networks", IEFT Internet Draft draft-harrison-mpls-oam-00.txt, February 2001, Harrison hereinafter)

Harrison discloses an "OAM [operation and maintenance] functionality for MPLS [multi protocol label switching] networks" (Title of document) comprising the following features:

Regarding claim 13, *a method for transmitting variable-length packets* (see "All OAM packets must have a minimum payload length of 40 octets" recited subsection 6.1 last paragraph line 1) *over connections which are established between communication devices of a communication system* (see "This Internet draft provides requirements and mechanism for OAM (Operation and Maintenance) for the user-plane in MPLS networks. A connectivity verification 'CV' OAM packet is defined, which is transmitted periodically from LSP [label switching path] source to LSP sink" recited Abstract lines 1-4), *the method comprising:*

providing a marker (see subsection "6.1 Special MPLS Label Values") *within the header of a packet* (see "OAM Alert Labeled header" recited subsection 6.3.1 paragraph 2 line 1), *wherein the marker identifies a subset of total number of packets transmitted per connection which are used for operating and/or maintaining the network* (see "A special label, the 'OAM Alert Label' recited subsection 6.1 paragraph 1 line 3, and further "OAM Alert Label. This indicates that the first octet following the OAM Alert Label in the OAM payload (ie octet 5) is an OAM Function Type field" recited subsection 6.1 Table 1: "OAM Alert Label", right column "Meaning", lines 1-4), *wherein*

the communication devices form a network (see "connectivity verification 'CV' OAM packet is defined, which is transmitted periodically from LSP source to LSP sink" recited Abstract lines 1-4).

Regarding claim 14, *wherein the packets are transmitted in accordance with a Multi Protocol Label Switching (MPLS) transmission procedure (see "This Internet draft provides requirements and mechanism for OAM (Operation and Maintenance) for the user-plane in MPLS networks), wherein these packets being defined as MPLS packets, and wherein the MPLS packet with the marker are defined as MPLS-OAM (operating and maintenance) packets (see section "6. Mechanisms of MPLS OAM" and "A special label, the 'OAM Alert Label' recited subsection 6.1 paragraph 1 line 3, and further "OAM Alert Label. This indicates that the first octet following the OAM Alert Label in the OAM payload (i.e. octet 5) is an OAM Function Type field" recited subsection 6.1 Table 1: "OAM Alert Label", right column "Meaning", lines 1-4).*

Regarding claims 17/18, *wherein one of the reserved MPLS label values No. 4 to No. 15 is used in the header of the MPLS packet as the marker (see section "6.1 Special MPLS Label Values" Table 1: "OAM Alert Label" left column "Label value (Decimal)" line 1 "4", which is MPLS label value No. 4).*

Regarding claims 19/20, *an end-to-end MPLS-OAM packet flow is formed from the MPLS-OAM packets which is transmitted between source and sink of the connection (see "connectivity verification 'CV' OAM packet is defined, which is transmitted periodically from LSP source to LSP sink" recited Abstract lines 1-4), wherein the entire connection is monitored (see "CV flow could be used to detect*

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defects related to misrouting of LSPs as well as link and nodal failure" recited Abstract lines 4-6).

Regarding claim 25, *wherein a number of MPLS-OAM segment flows of different variants can be simultaneously created for any given segment of the connection* (see "FDI and BDI OAM packets are invoked, on a nominal 1 per second basis, when defects are detected. The FDI packet traces forward and upward through any nested LSP stack" recited subsection 6.3.3 lines 1-3).

Regarding claims 26/27, *providing a second marker within an MPLS-OAM packet to indicate whether the MPLS-OAM packet is part of an end-to-end MPLS-OAM packet flow or part of an MPLS-OAM segment flow* (see subsection "6.4.1 Connectivity Verification (CV) Packets" "Figure 1: CV Payload Structure" showing the fields of "Ingress Router ID" and "LSP [label switching path] ID", which, as well known to one skilled in the art, clearly indicates whether a *packet flow is a part of an end-to-end or a segment*).

Regarding claim 28, *providing a third marker within an MPLS OAM packet to indicate the variant of the MPLS-OAM segment of the MPLS-OAM packet* (see subsection "6.4.1 Connectivity Verification (CV) Packets" "Figure 1: CV Payload Structure" showing the fields of "Ingress Router ID" and "LSP [label switching path] ID", which, as well known to one skilled in the art, clearly indicates *the variant of the MPLS-OAM segment*).

Regarding claim 29, *providing a fourth marker within an MPLS-OAM packet which identifies the functional significance of the MPLS-OAM packet in greater detail*

(see subsection "6.4.1 Connectivity Verification (CV) Packets" "Figure 1: CV Payload Structure" showing the field of "Func Type" as the first octet of the packet, and see subsection 6.3.4 "MPLS OAM Function Types for the OAM Alert Label" showing various "OAM Function Type code point" and corresponding "First octet of OAM packet payload Function Type purpose" giving *greater details*).

Regarding claim 30, *transmitting further information within an MPLS-OAM packet, wherein this information is used to support operation and maintenance of the network* (refer to subsection 6.4.1 figure 1 field "Ingress Router ID" and see "For nodes that do not support IPv6 addressing, an IPv4 address can be used for the Router ID" recited subsection 6.4.1 paragraph 4 lines 1-2).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harrison et al ("OAM Functionality for MPLS Networks", IEFT Internet Draft draft-harrison-mpls-oam-00.txt, February 2001, Harrison hereinafter)

Harrison discloses the claimed limitations in paragraph 2 above including forming *the connection between source and sink of an LSP (label switching path) and*

monitoring the connection (see discussion of claims 19/20). Although Harrison does not expressly or directly disclose the particular features of:

Regarding claims 22/23, *the connection is formed from a plurality of segments, wherein an MPLS-OAM segment flow is formed from the MPLS-OAM packets which is transmitted / wherein the MPLS-OAM segment flow is transmitted, within the segment of the connection concerned / between source and sink of the segment, and wherein this segment of the connection is monitored*,

Harrison does disclose “LSP Tunnel” and “Subnetwork” [segment] (Section “2. Definitions” left column “Functional Architecture Term” entries of “LSP Tunnel” and “Subnetwork”) wherein “An LSP Tunnel is an LSP with well-defined source (ingress point) and sink (egress point)” (Section “2. Definitions” right column “Meaning” entry for “LSP Tunnel” lines 1-3) and “A subnetwork is a contiguous topological region of a network delimited by its set of peripheral access points, and is characterized by the possible routing across the subnetwork between those access points” recited Section “2. Definitions” right column “Meaning” entry for “Subnetwork” lines 1-7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the same OAM functionality between data source and sink to a *segment* [e.g. an “LSP Tunnel” with “well defined source and sink” or a “Subnetwork” “delimited by its access points”] in order to provide a refined OAM mechanism “using OAM functions that require a layer network to function in reliable and predictable manner for fault diagnosis”, as suggested in Harrison (subsection 5.9 lines 3-5).

7. Claims 15, 16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harrison et al ("OAM Functionality for MPLS Networks", IEFT Internet Draft draft-harrison-mpls-oam-00.txt, February 2001, Harrison hereinafter) in view of Tinsley et al (US 2002/0131400, Tinsley hereinafter).

Harrison discloses the claimed limitations in paragraph 4 above. Harrison does not expressly disclose the following feature:

Regarding claims 15/16:

wherein the EXP bits in the header of the MPLS packet is used as the marker.

However, Harrison discloses other reserved bits being *used as the marker* as discussed above for claims 17/18 without saying that said reserved bits could include the EXP bits. Harrison also discloses using the EXP bits to indicate different LSPs (label switching paths) comprising "The CV OAM packet can be used on both E-LSPs and L-LSPs. However the coding of the EXP field is different in the two cases".

Tinsley discloses "a distributed gateway includes distributed gateway routing elements" comprising that *the EXP bits in the header of the MPLS packet is used to indicate QoS* (refer to figs. 3 and 6(B), which "is a block diagram of the fields of MPLS header 604 illustrated in fig. 6(A)" as said [0049] lines 1-2), and see "Distributed gateway routing elements 310 may initialize experimental [EXP] use field 614 to a value that indicates a quality of service to be given to the packets" recited [0049] lines 8-11).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Harrison by including the EXP bits of Tinsley into Harrison's choices of reserved bits in the same fashion as Tinsley's using them for QoS

in order to provide more alternatives for OAM of MPLS and further “the probability of a complete network outage due to failure of one of the distributed gateway routing element is decreased”, as pointed out by Tinsley ([0074] lines 8-11).

Regarding claim 21, Harrison discloses *an end-to-end MPLS-OAM packet flow is formed from the MPLS-OAM packets which is transmitted between source and sink of the connection* (see “connectivity verification ‘CV’ OAM packet is defined, which is transmitted periodically from LSP source to LSP sink” recited Abstract lines 1-4), *wherein the entire connection is monitored* (see “CV flow could be used to detect defects related to misrouting of LSPs as well as link and nodal failure” recited Abstract lines 4-6).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2003/0118019 discloses MPLS in PPP connection wherein special OAM frame header is identified with a uniquely assigned code x0E07 (see fig. 5B).

US 2003/0112760 provides a system and method for transmission of OAM packets between ATM and switching networks using MPLS upon failures.

US 6,331,978 provides general label encapsulation protocol (GLEP) wherein special indicator is used in message header to indicate GLEP.

US 2002/0016852 discloses a method for layer 1 frame in STM or ATM mode wherein protocol identifier is used to indicate OAM operation.

US 5,793,976 provides method and apparatus for performing network monitoring using special value in message header to indicate OAM operation.

US 2001/0002909 discloses ATM switch with OAM functions using OAM cell information in message headers.

ITU-T Study Group 13 discloses draft-ohta-mpls-label-value-00.txt (<http://tools.ietf.org/html/draft-ohta-mpls-label-value-00>) detailing use of a reserved label value in MPLS to indicate OAM functions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Lai whose telephone number is 571-272-9741. The examiner can normally be reached on M-F 7:30-5:00 EST, Off alternative Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on 571-272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AL

KWANG BIN YAO
SUPERVISORY PATENT EXAMINER

A handwritten signature in black ink, appearing to be 'Kwang Bin Yao', written in a cursive style.